

## GENUS TOREUMATICA.

\* *Transverse sutural grooves wide and deep; back granular.*

## 8. TOREUMATICA HARDWICKII.

Transverse sutural groove deep, wide; tessera of interambulacral area high, about twice as broad as high, with one large and several scattered unequal smaller tubercles.

*Hab.* —? Presented by General Hardwicke.

\*\* *Transverse sutural grooves narrow and small; back equally granular.*

## 9. TOREUMATICA GRANULOSA.

Transverse sutural groove narrow and shallow; interambulacral tessera with a subcentral row of large, and numerous nearly equally scattered smaller tubercles. Near the circumference the secondary tubercles become more distinct. Base concave.

*Hab.* —?

\*\*\* *Transverse sutural grooves indistinct; back equally tubercular.*

## 10. TOREUMATICA REEVESII.

Depressed, thin; tessera of interambulacral area with a single series of large, and several unequal-sized smaller tubercles. Under-side rounded, concave in the middle; ambulacral area with two, interambulacral area with three rows of subequal tubercles; holes between tessera distinct, between ambulacral tessera circular and deep.

*Hab.* China. Presented by J. R. Reeves, Esq.

\*\*\*\* *Transverse sutural grooves indistinct; back with a smooth band, near the suture between the interambulacral areas.*

## 11. TOREUMATICA CONCAVA.

Depressed, thin; middle between two interambulacral areas on the back smooth; interambulacral tessera with a few unequal tubercles near the ambulacra. Under-side deeply concave, largely tubercular; ambulacral area with two, interambulacral with three series of large tubercles.—*Hab.* China.

## BOTANICAL SOCIETY OF EDINBURGH.

January 10, 1856.—Colonel Madden, President, in the Chair.

The following papers were read:—

1. "On some Species of *Epilobium*," by Charles C. Babington, M.A., F.R.S. &c. (See page 236.)

2. "Observations on the Pollen Tube, its growth, histology, and physiology," by P. Martin Duncan, M.B. Lond., F.G.S. &c.

The author details experiments made on *Tigridia conchiflora*. In this plant the style and stigma are at least 4 inches in length, and after the lapse of fourteen hours from the application of pollen-grains,

hundreds of pollen-tubes may be seen in the centre of the style, many in the axis of the ovary, and generally one in each micropyle. The following is a summary of the results of many experiments on this plant:—

1. The pollen-tube grows at the rate of an inch in four hours, and under very favourable circumstances (as under great heat and moisture) twice as rapidly.

2. The pollen-tube is not a simple tubular prolongation of the inner membrane (intine) of the pollen-grain, except to a certain distance. It is in reality composed of a series of cells, the first of which is formed from the intine, the second is formed within the papillose cells of the stigma, the third near the axis of the style, and the others at varying distances. The last cell is usually at the spot in the ovary where the tube perforates the cell-wall of the ovary to enter the canal of the micropyle of the ovule. Each cell is divided from that above and below by a more or less perfect involution of the external cell-wall.

3. The pollen-tube passes through the stigma by a regular process of cell-growth. Afterwards cell after cell is added to the tube by a process of division, each cell performing its function independently.

4. No germinal vesicles exist in the embryo-sac of the *Tigridia*; the pollen-tube effuses its contents into the sac with whose granular contents a mixture occurs, and the embryo is evolved out of this mixture.

3. "Notes on the Chaulmoogra Seeds of India," by Charles Murchison, M.D., M.R.C.P.L.

A bland fixed oil from these seeds, furnished by the *Chaulmoogra odorata*, Roxb., is used by the natives of India in various cutaneous diseases.

4. "On the Gutta Percha plant of India," by Dr. Cleghorn.  
Records the discovery of it in several parts of Peninsular India.

5. "Notice of the Flowering of *Agave americana*," by Joseph Lister, F.R.C.S.E.

In 1855, at an age of at least fifty years, the Aloe flowered, and afterwards a small offshoot appeared above the earth, which, instead of being a small leafy repetition of its parent, bore no leaves, but two flowers like those produced a few months previously by the central stem. This offshoot consisted of a succulent underground stem, about 10 inches long, connected with the underground part of the main plant. It was also found that there were about a dozen other offshoots struggling upwards through the earth, terminated by pale green buds, which, in the case of two that I dissected, contained rudimentary flowers. Thus the whole constitution of the Aloe appears to have been remarkably affected with a tendency to flowering; and just as the part above ground shot forth a stem with a multitude of flower-buds, so the underground portion, instead of sending out a few sprouts terminating in leaf-buds, produced a dozen or more offshoots ending in flower-buds and destitute of leaves.

6. "On the Flowering of Plants, &c., in the Isle of Wight," by Dr. T. Bell Salter.

7. "List of Plants in flower, in the open air, in the neighbourhood of Ryde, Isle of Wight, in November 1855," by Dr. T. Bell Salter.

### MISCELLANEOUS.

*On the Earliest Stages in the Development of Pelagia noctiluca.*  
By Dr. A. KROHN.

IN the December number of Müller's 'Archiv,' Dr. A. Krohn has given a remarkable positive proof of the existence amongst the *Medusæ* of a direct reproduction, without that intervention of polype-like gemmiparous forms which constitutes what is called the "alternation of generations" in these animals. This mode of reproduction appears to be of exceedingly rare occurrence in the *Medusæ*. It has hitherto been observed only in two species besides the *Pelagia noctiluca*; namely in *Æginopsis mediterranea* (by Müller), and in *Trachynema ciliatum* (by Gegenbaur). After repeatedly observing young *Medusæ*, which, from their general characters, appeared to belong to the genus *Pelagia*, the author, in the winter of 1853-54, met with individuals in a more advanced state, which proved that they were the young of the common Mediterranean *P. noctiluca*; and as in their earlier stage they agreed perfectly with the young of *Medusa aurita*, which had not long been detached from their polype-like nurses, he naturally concluded that *Pelagia noctiluca* did not differ essentially in its mode of reproduction from the other *Medusidæ*. Subsequently, however, Dr. Krohn met with individuals in a far lower stage of development, the youngest of which were of such simple structure that it appeared to him they could not be far from the embryonic state, and he therefore considered it important to ascertain in what form the embryo quitted the egg. With this view he examined numerous females without success, and was therefore compelled to have recourse to artificial impregnation. His first attempts failed, but in the month of April he succeeded in his object. Segmentation commenced in the ova within a few hours after impregnation, and the first free embryo was seen in the thirty-second hour.

The embryos exhibited an unexpected form. They were always considerably elongated, sometimes oval or oblong, sometimes very long, slender, and cylindrical. They measured from  $\frac{1}{2}$  to 1 millim. in length; the anterior extremity is closed and rounded, whilst the other appears more or less truncated, and exhibits an extremely small round opening (the mouth), which leads into a well-marked roundish cavity (the stomach), occupying the hinder third of the body. The embryos appear semitransparent, in consequence of a delicate whitish coat, which covers the limpid substance of the body. This is closely set with fine short cilia, by the action of which the little creatures